

These seeds have the Inventory number 38,696. Other importations are numbered 1928, 1929, and 42,365.

ZOOLOGY.—*A revision of the crinoid family Antedonidae, with the diagnoses of nine new genera.*<sup>1</sup> AUSTIN H. CLARK, National Museum.

The family Antedonidae is the most universally distributed of all the families of recent crinoids; its species occur everywhere, ranging from the tropical littoral in both hemispheres uninterrupted down to the greatest depths at which crinoids have been found, and include all of the strictly antarctic and all of the arctic comatulids.

Owing to the difficulty involved in dealing with the species of this family, which arises chiefly from the altogether extraordinary brittleness and fragility of the great majority, and the resultant lack of some essential feature or other in very many of the published descriptions, no really satisfactory disposition of the included types has as yet been proposed; but it is believed that the following arrangement more nearly represents the true interrelationships of the component species than any of its predecessors.

The species referable to the family Antedonidae fall naturally into forty genera, which in turn are distributed among seven well characterized groups, ranking as subfamilies. These subfamilies with their included genera are the following:

ANTEDONINAE: *Antedon*, *Compsometra*, *Mastigometra*, *Euantedon*, *Toxometra*, *Dorometra* (nov.), *Eumetra*, *Iridometra*, *Hybometra*, *Andrometra* (nov.), and *Argyrometra* (nov.).

THYSANOMETRINAE: *Thysanometra* and *Coccometra*.

PEROMETRINAE: *Perometra*, *Nanometra*, *Erythrometra*, and *Hypalometra*.

HELIOMETRINAE: *Helimetra*, *Promachocrinus*, *Anthometra*, *Solanometra*, *Florometra*, and *Cyclometra*.

ZENOMETRINAE: *Balanometra*, *Psathyrometra*, *Leptometra*, *Adelometra*, *Zenometra*, *Sarametra* (nov.), and *Eumorphometra*.

ISOMETRINAE: *Isometra*.

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BATHYMETRINAE: *Orthometra* (nov.), *Tonrometra* (nov.), *Fariometra* (nov.), *Trichometra*, *Hathrometra*, *Nepiometra* (nov.), *Phrixometra* (nov.), *Thaumatometra*, and *Bathymetra*.

**Dorometra**, gen. nov.

*Genotype*.—*Antedon nana* Hartlaub, 1890.

*Diagnosis*.— $P_3$  is much the longest and stoutest pinnule on the arm; the cirri are XX-XLV (rarely over XL), with not over 16 segments; these have produced distal ends which overlap the proximal ends of those succeeding, and the outer are much longer than their proximal width; the size is small, the arms being from 23 mm. to 50 mm. long; the brachials have smooth, or only very finely spinous, distal edges.

*Geographical Range*.—Red Sea to Madagascar and Mauritius, eastward to northern Australia and the East Indies, and northward to southern Japan.

*Bathymetrical Range*.—From the shore line down to 106 meters.

*Included Species*.—*Dorometra nana* (Hartlaub), *Dorometra mauritiana* (A. H. Clark), *Dorometra gracilis* (A. H. Clark), *Dorometra briseis* (A. H. Clark), *Dorometra parvicirra* (P. H. Carpenter), *Dorometra aegyptica* (A. H. Clark), and *Dorometra clymene* (A. H. Clark).

**Andrometra**, gen. nov.

*Genotype*.—*Antedon psyche* A. H. Clark, 1908.

*Diagnosis*.— $P_2$  is much longer than  $P_1$ , and longer than  $P_3$  though similar to the latter; the centrodorsal is more or less sharply conical.

*Geographical Range*.—Andaman Islands to southern Japan.

*Bathymetrical Range*.—From 54 to 201 (?250) meters.

*Included Species*.—*Andrometra psyche* (A. H. Clark) and *Andrometra india* (A. H. Clark).

**Argyrometra**, gen. nov.

*Genotype*.—*Iridometra crispa* A. H. Clark, 1908.

*Diagnosis*.—Centrodorsal conical, broader than high, almost completely covered with cirrus sockets which decrease in size toward the apex; these are from LX to LXXX in number; cirri very fragile, with 12-17 more or less elongated segments;  $P_3$  is of the same length and character as the succeeding pinnules;  $P_1$  and  $P_2$ , which may be longer or shorter than the following pinnules, have 12-13 segments, and taper evenly to a point; their component segments become progressively elongated; the brachial structure resembles that of *Antedon petasus*; the size is small, the arms being about 30 mm. in length.

*Geographical Range*.—Hawaiian Islands to northern New Zealand.

*Bathymetrical Range*.—From 108 to 293 meters.

*Included Species*.—*Argyrometra crispa* (A. H. Clark) and *Argyrometra mortenseni*, nov.

*Argyrometra mortenseni*, sp. nov.

*Diagnosis.*—This species is easily distinguished from *A. crispa* by the much more expanded distal ends of the cirrus segments (in *crispa* the dorsal and ventral profiles of the cirrus segments are everywhere practically parallel), and by the different relationships of the earlier pinnules.

$P_1$  is 3.3 mm. long, slender and evenly tapering, composed of 12 segments of which the first is slightly broader than long, the second and third are very slightly longer than broad, and the following become progressively elongated, being between four and five times as long as broad distally; the segments are cylindrical and smooth, with little or no development of spines on the distal edges.  $P_2$  is 4 mm. long, very slightly stouter, composed of 12 segments of which the distal are more elongated than those of  $P_1$ .  $P_3$  is 5 mm. long with about 12 segments, about as stout basally as  $P_2$  but tapering more slowly and hence appearing stouter, with relatively shorter segments which beyond the third have prominently overlapping and finely spinous distal ends. The following pinnules resemble  $P_3$ .

The cirri have 17 segments of which the longest are from four to six times as long as the terminal diameter. The arms are about 30 mm. long.

*Locality.*—North Cape, New Zealand.

*Depth.*—Sixty fathoms.

*Sarametra*, gen. nov.

*Genotype.*—*Zenometra triserialis* A. H. Clark, 1908.

*Diagnosis.*—The division series and arm bases are very spiny; the very long rounded conical centrodorsal bears three regular columns of cirrus sockets in each radial area, the radial areas being delimited by broad bare lines; the cirri have 50–60 segments of which the proximal are more or less elongated and the distal are short, never longer than broad, and bear prominent dorsal spines; all of the pinnules are present; the size is large, the arms being about 150 mm. long.

*Geographical Range.*—Known only from the Hawaiian Islands.

*Bathymetrical Range.*—Between 346 and 633 meters.

*Included Species.*—*Sarametra triserialis* (A. H. Clark).

*Orthometra*, gen. nov.

*Genotype.*—*Trichometra hibernica* A. H. Clark, 1913.

*Diagnosis.*—The cirrus segments, which are 25–33 (usually nearer the latter) in number, are cylindrical, without expanded distal ends, and short, the longest (third-fifth) being about one-third again as long as broad, and the distal slightly broader than long; the elements of the IBr series and the lower brachials are without lateral processes, and are widely free laterally.

*Geographical Range*.—Known only from the western coast of Ireland.

*Bathymetrical Range*.—From 698 to 900 meters.

*Included Species*.—*Orthometra hibernica* (A. H. Clark).

**Tonrometra**, gen. nov.

*Genotype*.—*Antedon remota* P. H. Carpenter, 1888.

*Diagnosis*.—The cirrus segments, which are not more than 20 in number, are all short, the longest being not so much as twice as long as the median diameter, and have much swollen distal ends; the IB series and lower brachials are in close lateral contact.

*Geographical Range*.—Moluccas to Marion Island, southeast of Africa.

*Bathymetrical Range*.—From 1089 to 2880 meters.

*Included Species*.—*Tonrometra brevipes* (A. H. Clark) and *Tonrometra remota* (P. H. Carpenter).

**Fariometra**, gen. nov.

*Genotype*.—*Trichometra explicata* A. H. Clark, 1908.

*Diagnosis*.—The centrodorsal is sharply conical with straight sides, nearly or quite as high as broad at the base; the proximal cirrus segments are elongated, at least twice as long as the median diameter and usually much longer.

*Geographical Range*.—Philippine Islands to Célebes.

*Bathymetrical Range*.—From 509 to 1314 meters.

*Included Species*.—*Fariometra explicata* (A. H. Clark), *Fariometra scutifera* A. H. Clark, and *Fariometra dione* A. H. Clark.

**Nepiometra**, gen. nov.

*Genotype*.—*Antedon laevis* P. H. Carpenter, 1888.

*Diagnosis*.—The centrodorsal is rounded conical or hemispherical, not so high as broad at the base; the proximal cirrus segments are elongated, at least twice as long as the median diameter, and usually much longer; the brachials do not have strongly produced and very spinous distal ends; at most the distal edges of the outer brachials are bordered with fine spines; the cirri have 20–30 relatively short segments of which the last 6–13 are only very slightly, if at all, longer than broad; the pinnules are not especially long, and the distal pinnules are of the same length as the proximal;  $P_2$  resembles  $P_3$  and the following pinnules and is slightly longer and stouter than  $P_1$  with somewhat fewer segments which are proportionately longer;  $P_2$  may bear a gonad, though these usually begin on  $P_3$ ; the arms are between 25 mm. and 60 mm. in length.

*Geographical Range*.—Kei and Meangis Islands and southern Célebes; ? Galápagos Islands and Panamá.

*Bathymetrical Range*.—From 204 to 1158 (?1760) meters.

*Included Species*.—*Nepiometra obscura* (A. H. Clark), *Nepiometra alcyon* (A. H. Clark), *Nepiometra laevis* (P. H. Carpenter), *Nepiometra io* (A. H. Clark), and *Nepiometra* (?) *parvula* (Hartlaub).

**Phrixometra**, gen. nov.

*Genotype*.—*Antedon longipinna* P. H. Carpenter, 1888.

*Diagnosis*.—The centrodorsal is rounded conical or hemispherical, not so high as broad at the base; the cirri are about XXX, 20–25; the proximal cirrus segments are elongated, at least twice as long as the median diameter and usually much longer; the brachials do not have strongly produced and very spinous distal ends; at most the distal edges of the outer brachials are bordered with fine spines; the pinnules are very long, the proximal longer than the distal;  $P_2$  is very slightly shorter than  $P_1$ , but similar to it, with about 18 elongated segments; the following pinnules are similar; the arms are about 20 mm. long.

*Geographical Range*.—Southeastern South America.

*Bathymetrical Range*.—Known only from 1080 meters.

*Included Species*.—*Phrixometra longipinna* (P. H. Carpenter).